B. Claims

Please amend claims 1 and 5-8 as follows. A complete listing of all the claims appears below; this listing replaces all earlier amendments and listings of the claims.

1. (Currently Amended) An ink-jet printhead substrate on which are mounted electrothermal transducers for generating thermal energy utilized to discharge ink and driver circuits for driving said electrothermal transducers comprising:

a logic circuit for outputting, based upon an input signal of a first voltage amplitude level, a block selection signal and an element driving signal, which is for each electrothermal transducer in a selected block, at a second voltage amplitude level ~~based upon an input signal of a first voltage amplitude level, the second voltage amplitude level being~~ which is higher than the first voltage amplitude level; and

a driver circuit for driving the electrothermal transducers in block units based upon the block selection signal and element driving signal output from said logic circuit, which have the second voltage amplitude level.

2. (Previously Canceled)

3. (Previously Presented) The ink-jet printhead substrate according to claim 1, wherein said logic circuit comprises:

a first converting circuit for converting input data of the first voltage amplitude level to the second voltage amplitude level; and

a second converting circuit for generating a block selection signal of the

second voltage amplitude level and an element driving circuit for a selected block from an input signal of the second voltage amplitude level obtained from said first converting circuit.

4. (Previously Presented) The ink-jet printhead substrate according to claim 1, further comprising a monitor element for sensing a state of said semiconductor substrate.

5. (Currently Amended) A method of controlling drive of electrothermal transducers on a substrate on which are mounted electrothermal transducers for generating thermal energy utilized to discharge ink and driver circuits for driving said electrothermal transducers comprising:

inputting an input signal of a first voltage amplitude level;

outputting, based upon an input signal of a first voltage amplitude level, a block selection signal and an element driving signal, which is for each electrothermal transducer in a selected block, at a second voltage amplitude level ~~based upon the signal that has been input, the second voltage amplitude level being~~ which is higher than the first voltage amplitude level; and

driving the electrothermal transducers in block units based upon the block selection signal and element driving signal output from said logic circuit, which have the second voltage amplitude level.

6. (Currently Amended) An ink-jet printhead comprising:

discharge ports for discharging ink; and

a substrate on which are mounted electrothermal transducers provided to correspond to said discharge ports, and driver circuits for driving said electrothermal transducers, wherein said substrate includes:

a logic circuit for outputting, based upon an input signal of a first voltage amplitude level, a block selection signal and an element driving signal, which is for each electrothermal transducer in a selected block, at a second voltage amplitude level ~~based upon an input signal of a first voltage amplitude level, the second voltage amplitude level being~~ which is higher than the first voltage amplitude level; and

a driver circuit for driving the electrothermal transducers in block units based upon the block selection signal and element driving signal output from said logic circuit, which have the second voltage amplitude level.

7. (Currently Amended) An ink-jet printhead cartridge comprising an ink-jet printhead and an ink tank filled with ink for being supplied to said ink-jet printhead, said ink-jet printhead having discharge ports for discharging ink and a substrate on which are mounted electrothermal transducers provided to correspond to said discharge ports, and driver circuits for driving said electrothermal transducers, wherein said substrate includes:

a logic circuit for outputting, based upon an input signal of a first voltage amplitude level, a block selection signal and an element driving signal, which is for each electrothermal transducer in a selected block, at a second voltage amplitude level ~~based upon an input signal of a first voltage amplitude level, the second voltage amplitude level being~~ which is higher than the first voltage amplitude level; and

a driver circuit for driving the electrothermal transducers in block units based upon the block selection signal and element driving signal output from said logic circuit, which have the second voltage amplitude level.

8. (Currently Amended) An ink-jet printing apparatus comprising an ink-jet printhead and a circuit for transmitting a control signal to said printhead, said ink-jet printhead having discharge ports for discharging ink and a substrate on which are mounted electrothermal transducers provided to correspond to said discharge ports, and driver circuits for driving said electrothermal transducers, wherein said substrate includes:

a logic circuit for outputting, based upon an input signal of a first voltage amplitude level, a block selection signal and an element driving signal, which is for each electrothermal transducer in a selected block, at a second voltage amplitude level ~~based upon an input signal of a first voltage amplitude level, the second voltage amplitude level being~~ which is higher than the first voltage amplitude level; and

a driver circuit for driving the electrothermal transducers in block units based upon the block selection signal and element driving signal output from said logic circuit, which have the second voltage amplitude level.

9.(Previously Presented) The ink-jet printhead substrate according to claim 1, wherein said logic circuit includes a shift register circuit, a decoder circuit and a converting circuit for converting signals output from said shift register circuit and said decoder circuit into signals having the second voltage amplitude level.

10. (Previously Presented) The ink-jet printhead substrate according to claim 9, wherein a withstand voltage of a transistor constituting said driver circuit is higher than that of a transistor constituting said shift register circuit and said decoder circuit in said logic circuits.

11. (Previously Presented) The ink-jet printhead substrate according to claim 9, further comprising a voltage generating circuit for generating a voltage to be supplied to said conversion circuit based on a voltage supplied to said electrothermal transducers.

12. (Previously Presented) The ink-jet printhead substrate according to claim 1, wherein said substrate has an ink supply port for supplying ink, and said electrothermal transducers and said driver circuit are arrayed along said ink supply port.

13. (Previously Presented) The ink-jet printhead substrate according to claim 12, wherein said logic circuit is located in an area other than a portion along said ink supply port.

14. (Previously Presented) The ink-jet printhead according to claim 6, wherein said logic circuit includes a shift register circuit, a decoder circuit and a converting circuit for converting signals output from said shift register circuit and said decoder circuit into signals having the second voltage amplitude level.

15. (Previously Presented) The ink-jet printhead according to claim 14, wherein a withstand voltage of a transistor constituting said driver circuit is higher than that of a transistor constituting said shift register circuit and said decoder circuit in said logic circuits.

16. (Previously Presented) The ink-jet printhead according to claim 14, further comprising a voltage generating circuit for generating a voltage to be supplied to said conversion circuit based on a voltage supplied to said electrothermal transducers.

17. (Previously Presented) The ink-jet printhead according to claim 6, wherein said substrate has an ink supply port for supplying ink to said substrate, and said electrothermal transducers and said driver circuit are arrayed along said ink supply port.

18. (Previously Presented) The ink-jet printhead according to claim 17, wherein said logic circuit is located in an area other than a portion along said ink supply port.